Water Availability and Conservation Report for Indian Wells Valley

South Lahontan Regional Forum

September 25, 2013

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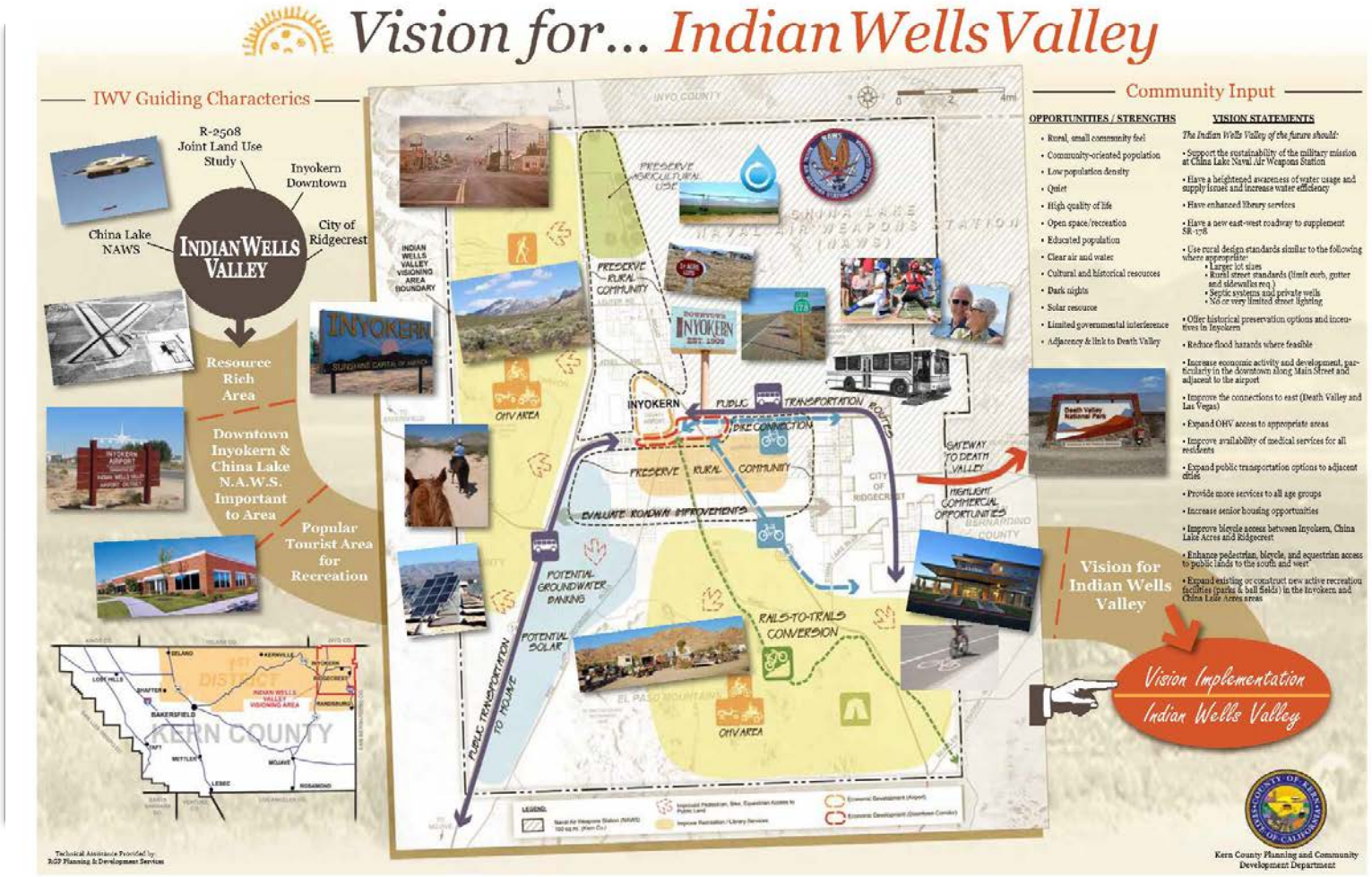
Community Interest in Water



Highlights of Today's Presentation

- Work done to date.
- Analysis approach
- Initial findings

Who is Todd Engineers?

- Todd Engineers, Alameda, CA
  - Consulting firm specializing in groundwater studies.
  - Hired by County of Kern
- Project Staff
  - Gus Yates, PG, CHG: Senior Hydrologist
  - Iris Priestaf, PhD: President

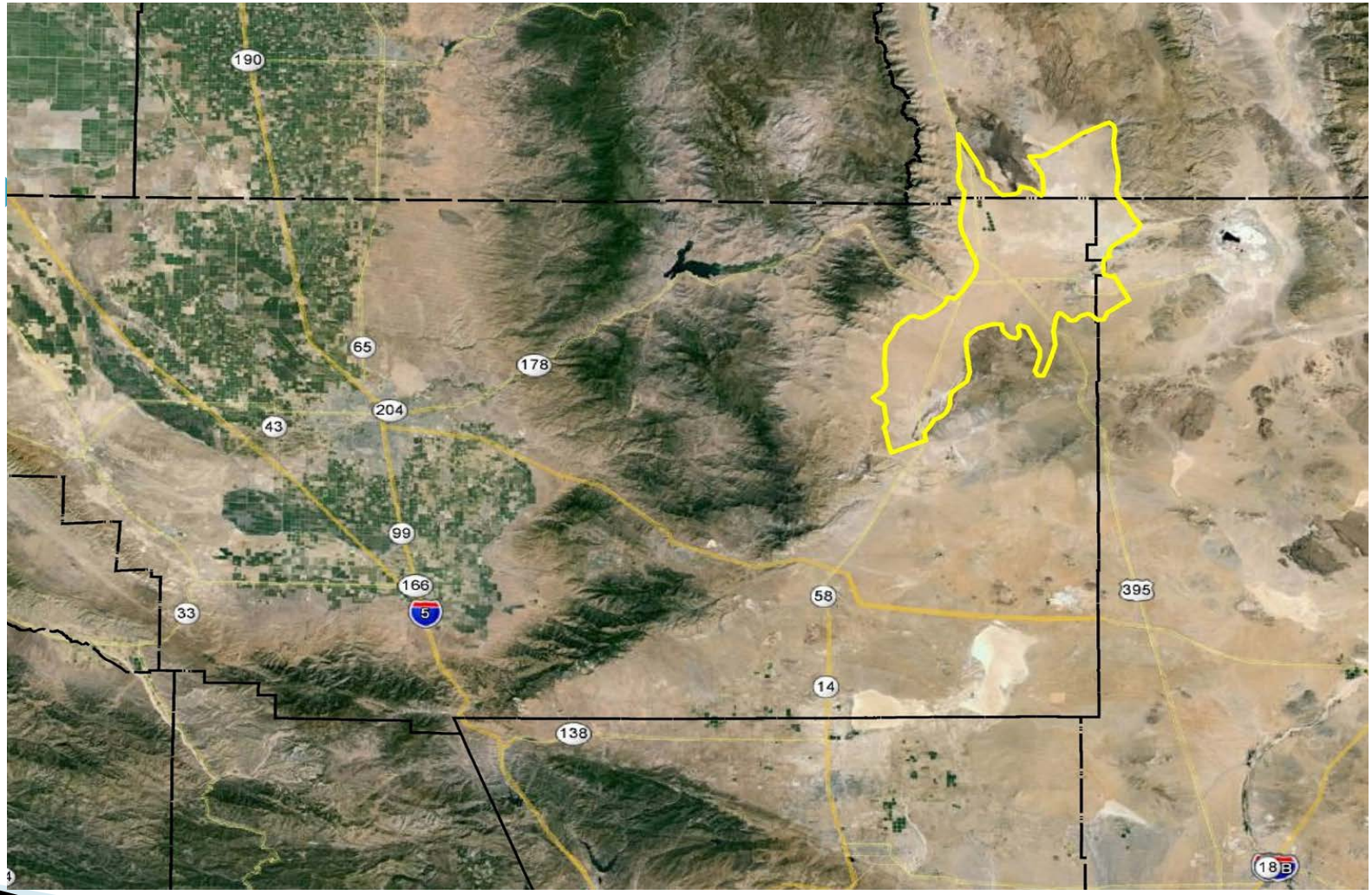
Objectives

- Sustainability (County of Kern)
  - Comprehensive review of the groundwater basin.
  - Based on determinations, recommendation of actions available to ensure a long-term sustainable basin and water supply for all residents of the Inyokern area.
- Study Objectives (Todd Engineers)
  - Status report on groundwater conditions.
  - Develop strategic goals.

Study Approach

- Critically review previous studies.
- Evaluate perceptions, concerns and ideas.
- Strive for consensus on technical issues.
- Propose strategic goals.
- Recommend management measures and identify potential next steps.

Study Area



Key Studies We Reviewed

USGS

- Lee (1912, 1913)
- Thompson (1929)
- Kunkel and Chase (1969)
- Bloyd and Robson (1971)
- Berenbrock and Martin (1991)

Others

- Austin (1988)
- Tiedemann (1991)
- USBR deep well report (1995)
- Dendy (1997)
- Ostdick (1997)
- Kern County GW ordinance (1998)
- Thyne, Gillespie and Ostdick (1999)

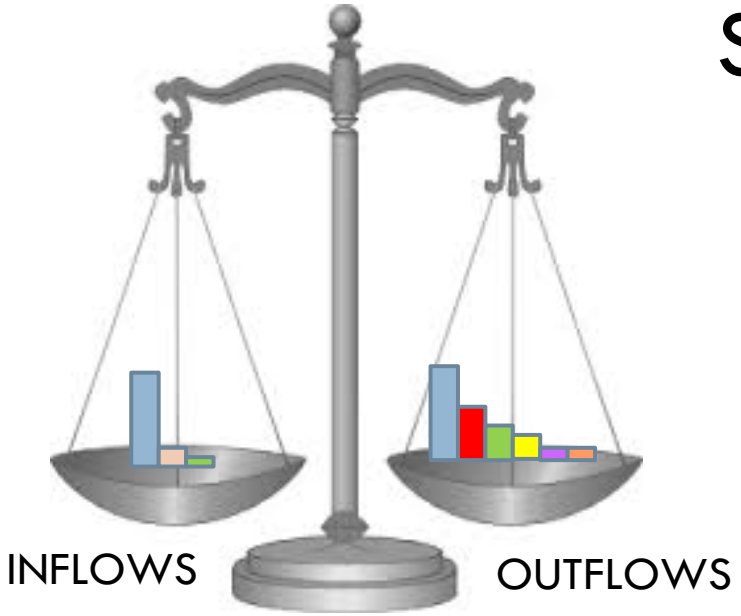
Others (continued)

- Tetra Tech (2003)
- DWR Bulletin 118 (2004)
- GTC (2008)
- Brown and Caldwell (2009)
- IWVWD UWMP (2010)
- WSIP DEIR (2010)
- Inyo-Mono IRWMP (2011)
- Ridgecrest drainage and WWTP plans (1989, 2011)
- GW Management Plan (2012)
- Fremont Valley water project NOP (2012)
- TriEco and Tetra Tech (2012)

And more…

Water Balance is Key to Supply

Inflows – Outflows = Change in Storage



Water Balance: Predevelopment

Inflows	–	Outflows	=	Change in Storage
• Mountain front recharge • Inter-basin inflow??		• Playa ET • Inter-basin outflow?		= zero

Water Balance: Developed Basin

Inflows	–	Outflows	=	Change in Storage
• Wastewater & irrigation percolation • Mountain front recharge • Inter-basin inflow??		• Wells • Playa ET • Inter-basin outflow?		

General Discussion

- Basin is in overdraft.
- Open-basin hypothesis not supported by available data.

Discussion Points

- Water levels continue to decline.
- Declines occur throughout the basin.
- Inflow from Kern Plateau via deep fractures is hydrogeologically improbable.
- No explanation for where excess inflow went prior to development.

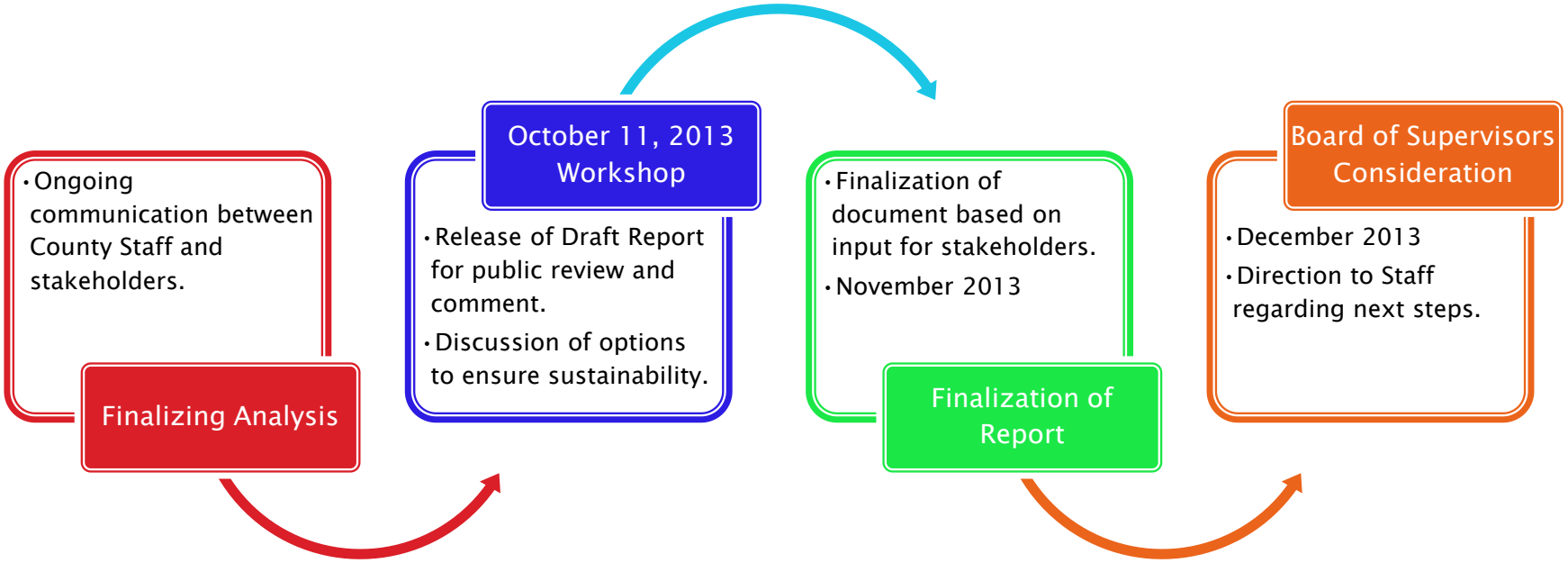
Discussion Points (Continued)

- Errors in Thyne et al (1999).
  - Groundwater flux calculations
  - Tritium in deep wells
  - Explanation of water isotopes
- Downward gradients at China Lake.

Next Steps

- Finalize review of all available data.
- Finalize groundwater findings.
- Determine and identify potential approaches and recommendations regarding actions to ensure a long term sustainable groundwater basin for the region.
- Recommend action steps available to Kern County.

Next Steps


Finalizing Analysis
• Ongoing communication between County Staff and stakeholders.
October 11, 2013 Workshop
• Release of Draft Report for public review and comment.
• Discussion of options to ensure sustainability.
Finalization of Report
• Finalization of document based on input for stakeholders.
• November 2013
Board of Supervisors Consideration
• December 2013
• Direction to Staff regarding next steps.

Contact & Questions

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